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The Maryland Fruit Grower

August, 1933

Maryland State
Horticultural Society

VITAMINS IN FRUITS

Vitamins are highly complicated chemical substances and we know more about what they do, than we know about what they are. *Vitamin* A promotes growth, especially in children. It contributes to our general well-being. It helps us to build up resistance to respiratory (lung) infection. It helps to resist eye diseases and affects the functions of our glands. *Vitamin* B is composed of many parts. It is complex, but we know that it helps in body growth and gives us an appetite. It helps keep our nervous system in shape, and controls malnutrition diseases such as beri beri and pellagra. *Vitamin* C helps to control scurvy. It helps in bone growth and has good effect upon teeth and gums, helping prevent abcessed teeth. *Vitamin* D prevents rickets.

What vitamins are found in fruits? From Sherman's book, "Chemistry of Food and Nutrition", the data given below are taken:

*Indicates that the food contains the vitamin.

**Indicates that the food is a good source of the vitamin.

? Indicates that the evidence of presence of the vitamin is lacking or uncertain.

	Vitamin A	*Vitamin B*	*Vitamin C*
Apples, raw	*	* to **	**
Apples, canned	?	?	* to **
Apples, dried, cooked	?	*	*
Banana	* to **	* to **	**
Grapefruit	*	**	***
Grape	*	* to **	*
Lemon	*	**	***
Peaches, raw	*	* to **	**
Pears	?	*	?
Raspberries	?	?	**
Strawberries	?	*	* to **
Tomatoes, raw or canned	**	***	***

In addition to vitamins we should consider the chemical content of fruits, the helpful acids, digestive aids, energy units, etc., and tell the world that our apples and peaches are a food not a fad or a luxury.

ATTRACTIVE PACKING MATERIAL

Quoting from recent issue of "The Packer": "The use of packing materials for fruits and vegetables is steadily increasing. This is due to the fact that better packed produce generally brings higher market prices. "Shreds, in bright colors, are used to attract the eye, and are oiled to prevent scald. With them, fruit comes out of storage in first class condition, to demand a better price. Wraps in many different colors are used, not only in the oiled type to prevent scald, but with brand name and trademark imprinted, for valuable advertising effect. It has been found, too, that the use of wraps builds up a quality appeal for the fruit. Caps are doing much to prevent crushing of the top layer of fruit, which, in the crown pack, would otherwise be squeezed by the pressure of the lid. . . . ."

"Liners are necessary for the perfect crown pack and also have proved to be valuable as cushioning, preventing side bruising of the fruit. . . . ."

—Maryland Market News Letter, July 1, 1933.

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ABOUT SPRAYING

Once there was a fruit grower who said that he wanted the men who did his spraying, to have "strong backs but not too strong minds." After his trees began to bear and he began to harvest too many culls, he changed his story.

We all know that some growers get better control of diseases and insects. Some of this difference in control is due to different location, and difference in severity of infection, but time of spraying, material used, and completeness of coverage are usually found to be the main causes of difference in pest and disease control.

In looking over Maryland orchards this year, it is interesting to note that some orchards are practically free from scab and others have a very low percentage of aphis injury. Timeliness and use of certain materials are probably the main factors in this difference of control, but unless thorough coverage was combined with these other factors, we could not expect best results.

C. D. Ellenwood of Ohio Experiment Station, figures that spraying labor and spray materials represent 20 to 35 per cent of the total cost of a packed bushel of apples. With this idea in mind, it is well for us to try at harvest time, to determine where we have failed in our spraying. We don't expect to control all of the diseases and insects, but our spraying should be done in such a way that we get the most control for our money. The University of Maryland Extension Service conducts a Spray Service, and it must be more or less general, that is, it is conducted and the sprays timed according to the development of certain insects and diseases as observed by trained men in the field. If the spray cards do not arrive until after a grower has sprayed, it is no indication that the spray card is wrong, nor that the grower is mistaken. The cards are not exact for every orchard or condition, but the cards are more of a "check up" on the growers' spraying operations, and much time and effort is spent in trying to make the Maryland Spray Service as nearly perfect and of as much real value to the fruit grower as possible.

One way of adding economy to spraying is to have water available easily. Convenient filling tanks are one solution of this problem, but the hauling of water to the sprayer by a portable tank outfit is a great economy, as this allows the sprayer to move steadily and really doubles the spray output per day. In using the water hauling method, the spray materials are also carried to the

sprayer at the same time, and are mixed in as the sprayer is filled, adding the lead or calcium arsenate last. Quite a few growers are hauling water to the sprayers and are pleased with the results.

The argument over the superiority of the gun over the rod is still going on, and will never be settled. A careful operator will get good results with either, but there is some difference to be expected if the tree is dense and too tall to get drift or driving force inside the tree, or in the top of the tree.

Michigan Special Bulletin No. 230, "Success and Failure in Spraying for Scab and Codling Moth", published by Michigan Agricultural Experiment Station, East Lansing, Michigan, states that the tops and top center parts of trees are usually poorly covered. By carefully conducted work in various commercial orchards it was found that more scab and worm was found in the upper half of the tree. It was also found that many growers were not covering the tree centers and the fruit was stung or diseased on the side of the apple, toward the inside of the tree.

The amount of material required to cover a tree has been printed in the Maryland Spray Calendar, and it is interesting to note that figures from Ohio Experiment Station closely check the Maryland figures.

Ohio gives the following figures:

Years Age of Trees	Gallons per application
2 to 3	0.4
5	1.2
10	5.5
12	8.0
15 to 20	10 to 14
21 to 35	15 to 24

Our spraying machinery is not perfect; our spray materials need improvement; and our spraying operations are far less perfect, but figures show that method of coverage will often make more difference in results than time of application, materials used, or type of equipment employed.

Climb a few trees sometime, after the sprayer has passed and see what kind of a job of spraying you are doing. Notice, also, whether the trees are pruned so as to get the benefit of thorough spraying. It is a difficult job to spray a dense tree properly.

Suitor: I wish to marry your daughter.
Papa: Can you support a family?
Suitor: Yes, sir.
Papa: Better think it over carefully.
There are eight of us.

—Farm Journal.

PATRONIZE OUR ADVERTISERS.

MARYLAND STATION REPORT

In the Forty-fifth Annual Report of the Maryland Agricultural Experiment Station, the summary of horticultural research in Maryland for the years 1931-32 are given and should be of interest and value to fruit growers:

Horticulture:

1. The maintenance of annual bearing of apple trees can be assisted by pruning and fertilizer treatments. Adverse conditions, such as drought, serve to throw the trees into a biennial condition. Frost may act either adversely or beneficially in this respect.

2. Relatively slight shading of apples have a pronounced effect in reducing red color production of the fruits. Heavy shading resulted in no red color production and a smaller sized fruit.

3. Nitrogen fertilizers are necessary to maintain good growth and high yields under most soil conditions in Maryland orchards. Fibrous roots are more concentrated in the area 0-3 feet from the trunk of the apple tree, but a far greater proportion of fibrous roots is in the area beneath the outer spread of the branches. Nitrogen applications have been most effective when the fertilizer is distributed under the outer spread of the limbs of the tree, but are also of value applied to areas closer the trunk. Analyses of roots of apple trees, fall nitrated, show that nitrogen is taken into the roots during the winter months and stored in the larger roots.

4. A sod mulch system of apple orchard culture appears to give satisfactory results in Maryland if nitrogen fertilizers are supplied in sufficient amounts. An alfalfa sod is excellent for orchards where this crop can be grown.

5. Nitrogenous fertilizers in the spring of the fruiting year have resulted in increases in yields of strawberries, due largely to increased size of berry. Decreased yields have also resulted from the same fertilizer when used on Missionary variety on good soils. Good yields are dependent on moisture in the soil more than on added fertilizing elements under usual conditions encountered in Maryland.

6. Pollination results obtained in orchards at Hancock, Maryland, have shown that the variety York Imperial set less than one-fourth of a commercial crop when pollinated by its own pollen. Pollen from Red Rome, Wealthy, Red Duchess, Starking, Summer Rambo, Melba, Jonathan, and Joyce all caused sufficient set on York Imperial for a commercial crop.

Red Rome was found to set well with its own pollen and the fruits remain on the tree up to the "June Drop." During the "June Drop" however a much lighter percentage of the selfed fruits dropped than in the case of cross pollinated fruits. The selfed fruits also contained fewer seeds, were smaller and were more irregular in shape than the cross pollinated fruits. It is therefore recommended that this variety be set with cross pollenizers in order to insure a commercial crop. Pollen from Starking, Golden Delicious, Jonathan, and Red Duchess caused a commercial set of fruit on Red Rome. Pollen from Yellow Transparent, McEarly and Summer Rambo was also effective in causing a good set but these varieties usually bloom too early to be effective pollenizers in the Rome orchard.

Williams was found to be self-unfruitful at College Park. Pollen from Starking, Delicious, Yellow Transparent, Golden Delicious Wealthy and Wilson's Red June gave a satisfactory commercial set of fruit on this variety.

Jonathan, however, was not a satisfactory pollenizer.

Wilson's Red June was found to be self-unfruitful. Selfed fruits, however, often remain on well up to the "June Drop", but most of them are dropped during this period. Starking, Delicious, Golden Delicious, McIntosh, Melba, and Yellow Transparent were found to be satisfactory pollenizers for this variety.

Melba, a very promising new variety of the McIntosh type, was found to be self-unfruitful. McIntosh, Wealthy and Red Duchess and Joyce all caused a heavy set of fruit on this variety.

Golden Delicious was found to be self-unfruitful on most trees. A small percentage of the more vigorous spurs, however, will set fruit when selfed, although this is far from sufficient to give a commercial crop. Starking, Delicious, Red Duchess, Grimes Golden and Red Rome were all effective pollenizers for this variety. Pollen from Melba and Early McIntosh set fruits well on Golden Delicious but their blooming season may be too early to be effective as commercial pollenizers.

Red Duchess (Daniels) was found to be self-unfruitful. McIntosh, Melba and Joyce were found to be effective pollenizers for this variety.

Starking was found to be completely self-unfruitful. Golden Delicious, Grimes, Red Duchess, Melba and Early McIntosh proved to be effective pollenizers.

Grimes Golden, which has been classified in the literature as being self-unfruitful was found to be only slightly self-fruitful. Red Duchess, Starking and Summer Rambo were found to be effective pollenizers.

Lowry was found to be readily pollenized by Starking and Golden Delicious. Selfed flowers of this variety set very poorly.

7. Fruiting of the Concord grape has a devitalizing effect on the growth of the vine under commercial conditions, but the effect of the crop is not as great as usually is supposed.

8. Light pruning of young peach trees, moderate pruning of bearing trees and rejuvenation pruning of old trees is recommendable for Maryland conditions.

9. Starking, Melba, Red Rome, Lobo, Early McIntosh and Cortland are new varieties of apples which give promise as desirable sorts under Maryland conditions.

10. Five years of study have shown that fertilizers have not affected the firmness of storage quality of apples, peaches, or strawberries.

11. Potash salts applied to orchard soils in Maryland moved down through the lighter soils, but remained in the upper six inches in heavy soils.

12. The most desirable planting distance of peach trees under present orchard conditions is an important economic problem under study.

13. New varieties of peaches, apples, pears, cherries, plums, strawberries, gooseberries, currants, raspberries, blackberries and grapes are being tested to aid the grower in his selection of varieties.

14. Breeding work to develop new varieties of fruits of better quality or season is in progress.

15. Canning varieties of peaches (cling stone varieties grown in California) have been under test in Maryland, but most of them are not promising.

16. Spring plowing is better than fall plowing for garden and canning

peas.

17. The variety of cantaloupe, Hales Best, produced the largest number of prime fruits among several varieties with Benders Surprise second best.

18. Sweet potato plants grown with short root stems (one or two inch) produced more tubers and of better size and shape than plants with long root stems.

19. A sweet potato selection, now named Maryland Golden Sweet, has proved very desirable and is in big demand on the Eastern Shore.

20. Marglobe tomato made better canned product than Tri-State when these varieties were grown under heavy fertilization.

21. Moisture supply is an important factor in determining the yield of lima beans.

22. Manure plus 7-6-5 fertilizer gave much better yields of cabbage, bush potatoes, lima beans and snap beans than any fertilizer treatment with or without green manure crops. Sweet potatoes, however, respond better to a 2-8-10 fertilizer without manure.

ORCHARD COSTS

In the March, 1933, Maryland Fruit Grower, the itemized costs were given for the growing of a tree up to 9 years, these figures having been obtained from Missouri Circular 225. Below are given figures on annual costs for bearing apple trees from Missouri Circular 242. Figures are not always adaptable to all conditions, but it is of interest and value to have some idea of what growers spend per year to produce a crop. The figures given below cover about 14,000 bearing trees in various types of orchards, both owned or rented by the operators. Hence there is a variation of care and treatment given.

	Average cost per tree	Percentage Distribution of costs
Use of land	$ .36	8
Interest on trees	.69	15
Depreciation on trees	.51	11
FIXED COSTS	1.56	34
Pruning	.20	4
Spraying	.44	10
Fertilizing	.27	6
Mowing	.06	1
Use of equipment	.16	3
Miscellaneous	.19	4
OPERATING COSTS	1.32	28
Harvesting and selling costs	1.78	38
TOTAL COST	4.66	100

Note—

Due to a change in vacation time at the print shop, this issue of the "Maryland Fruit Grower" has been reduced to four pages, so as to get it printed before the shop closes for August. The September issue will be in the usual eight-page form.

Use Modern Methods to Control Orchard Pests

Lead—Oil Combination

"The most effective control yet devised against Codling Moth". Where growers are equipped to wash their fruit, this combination of Lead Arsenate and Summer Oil offers by far the best protection in bringing the fruit through to harvest time free from Codling Moth worms and stings. A clean crop this year has every prospect of real returns.

Recent developments in fruit cleaning methods insure no difficulty in meeting all residue tolerances, and at little cost.

Summer Oil with Other Arsenicals or Fluorine Compounds

Orthol-K, in combination with other arsenicals, such as Calcium Arsenate, offers an ideal spreader-sticker, and at the same time backs up the arsenical with high egg-killing efficiency.

Fluorine compounds show very good insecticidal efficiency against Codling Moth when used in combination with Orthol-K.

Nicotine—Oil Combination

Generally acknowledged to be the best substitute for Lead Arsenate or other sprays which leave objectionable residues.

Gives control equal to or better than Lead Arsenate alone, requires no expense for cleaning, and is the best all-around orchard clean-up spray for Aphids, Leaf-hoppers, Scale Insects, Red Mite and similar forms, which devitalize the trees, reduce grades and cut productiveness. Recently reduced prices on nicotine sprays justifies the use of this combination in every orchard.

Coposil

A new colloidal copper which has proved more effective, with safety, than Bordeaux; highly effective for the Apple Scab and Brooks' Fruit Spot. It is much safer than lime-sulphur. Coposil combines readily with Orthol-K Summer Oil.

California Spray-Chemical Corporation

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